

HISTORY OF THE LAKE WASHINGTON CANAL

(Concluded from April Issue, p. 127.)

In determining the salinity of the water of the canal system, samples of water were secured from different depths and stations along the waterway during the same day. The outer station was two miles from the locks, out in the Sound; the inner one, in Lake Washington, one mile from Webster Point Light and one mile off Madison St. As a result of the ten-year study the two men published their conclusions, as follows:

1. A body of fresh water connected with the sea by means of a canal and lock system will rapidly become contaminated with brackish water if proper facilities are not provided for the removal of the water admitted by the locks.

2. The concentration of the sea water in the canal is dependent upon (a) amount of rainfall, (b) number of dockages, (c) proper functioning of the salt water drain, (d) methods of disposal of the surplus water.

3. Lake Union serves as a secondary salt water basin and thus prevents under present conditions, the contamination of the water of Lake Washington.

4. Greater effectiveness could undoubtedly be obtained if the capacity of the salt water basin in Salmon Bay were increased and the present method for the disposal of sea water removed.

5. Storage of some of the surplus water of the spring months, to be used for flushing during the dry season, would aid materially in maintaining a low degree of salinity of the canal system. The diversion of additional streams into Lake Washington for increasing the water flow has been suggested.

6. To lessen the salinity in the canal and Lake Union, a modification of the present method for handling surplus water is essential.

7. Salinity to a depth of thirty feet in Salmon Bay is not sufficient to permit damage by the teredo.

From the study of the rates of flow of water into and out of the system, it is evident that sufficient water is not available for flushing purposes during the dry season, if the canal is to be kept comparatively free of sea water and at a relatively constant level. With increased industrial activities along the shores of the canal and the lakes, the number of lockages will continue to increase and

thus demand more and more water for flushing. With the increase in the population of Seattle, more and more of the water of Cedar River, one of the two main inlets to Lake Washington, will be used by the Water Department of the City of Seattle and thus diminish the present supply for Lake Washington. Therefore, it is apparent that an additional supply of fresh water is required for the canal system. This can only be obtained by diverting near-by streams of other water-sheds into Lake Samamish or Lake Washington.

Major J. B. Cavanaugh, in his report in 1915 recommended that the channel be deepened enough for deep draft vessels and that revetments of necessary strength to hold the banks be constructed. He reported that King County had done much more work than was required by Congress; it was estimated by the city engineer that the expenditures for bridges, sewers, crossings for water and gas pipes, special street grades and other purposes would make the cost of the canal to local interests to more than two times the total expenditures of the United States. Contrary to early surveys and recommendations, Major Cavanaugh reported that it was not practical to coordinate with any improvement of the ship canal, either flood protection or development and utilization of water for commercial purposes so as to reduce the cost of the improvement.

The canal was opened for traffic through the locks June 16, 1917, and the raising of the level of Salmon Bay completed the following month. The formal ceremony of opening the locks was held July 4, 1917, and was in charge of the Seattle Chamber of Commerce. Formal invitations were sent to guests for the ride through the locks and canal on the steamer. Below is a copy of the invitation:

You are invited
by the
Lake Washington Canal Celebration
Committee
to be present at the formal observance
of the
Opening of the Lake Washington Canal
at Seattle
Wednesday, July the Fourth,
Nineteen Hundred
Seventeen.

Guests from without the City are requested to register at the Seattle Chamber of Commerce and Commercial Club and secure program of the day.

Program will include a military parade, water pageant and other features. Federal, state, and city officials with citizens of the Northwest will take part.

Chapter III., Later Developments

The total length of the canal from deep water in Puget Sound to deep water in Lake Washington is approximately eight miles. This means considerable channel to keep dredged free of sediment. An allotment from the National Industrial Recovery Act is being applied to new work of enlarging the channel between the locks and Lake Washington, by dredging 662,000 cubic yards by contract; to be completed in the period from October, 1933, and September, 1934. The dredge is now (March 13, '34) at work just west of the entrance to "the portage."

The cost of the project to date (1932) has been \$3,346,778.43 for new work and \$110,201.86 for maintenance; besides this, the State of Washington spent \$246,567.07, and King County, \$742,070.51 in the excavation of the channel above the locks and in the construction of concrete revetments at the portage. A total of 5320 feet of concrete revetments have been constructed between Salmon Bay and Lake Union, and 920 feet between Lake Union and Lake Washington. Also a guide pier 300 feet long has been constructed below the south wall of the large lock. In 1922, provision was made for a 600 feet extension of the lower guide pier.

The full project width is necessary for the bulk of the commerce and the full depth between the locks and Lake Washington for about 15 per cent of the commerce. The full depth between the Sound and locks is necessary for only a small percentage of the present commerce. The project depth into Lake Washington is not sufficient to carry some of the commerce and expensive lighterage is necessary. In order to accommodate ocean-going vessels, government engineers recommended to the 72d Congress that the existing project be modified so as to provide a channel 30 feet deep and 100 feet wide from the locks to Lake Union; 200 feet wide from there to the Portage Cut; 100 feet through the cut; 200 feet wide from the cut through Union Bay to Lake Washington. This work is estimated to cost \$180,000, and is to be paid for by the United States. This, in spite of the fact that the canal project is considered as an "internal" one as far as Seattle is concerned. With the present channel, it is difficult, especially if a heavy wind is blowing, for large vessels to make the sharp turns just east of the Portage and east of the University bridge.

As time goes on and the commerce of this region increases, as it no doubt will, the canal will be used more and more, and its

channel will have to be widened, deepened, and straightened. The direful predictions of Mr. Semple, found elsewhere in this paper do not seem to be in the way of being borne out.

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